Patent Claims

1. A superconductor device (2)
- having a magnet (3) which contains at least one superconductive winding (4a, 4b) without any refrigerant,
- having a refrigeration unit,

and
- having a line system (10) having at least one closed pipeline (10a, 10b) for a refrigerant (k1, k1'; k2) which circulates in it on the basis of a thermosiphon effect for thermal coupling of the at least one winding (4a, 4b) to the refrigeration unit,

characterized in that the refrigeration unit has at least one cold head (6), and the at least one pipeline (10a, 10b) is closed with a cross section (9), which holds the refrigerant (k1, k1', k2), of less than 10 cm^2 at its end (11).

2. The device as claimed in claim 1, characterized in that the line system (10) has two pipelines (10a, 10b) which are filled with different refrigerants (k1 and k2, respectively) with different condensation temperatures.

3. The device as claimed in claim 2, characterized in that the pipelines (10a, 10b) are thermally coupled to a common cold head (6).

4. The device as claimed in claim 2, characterized in that the pipelines are thermally coupled to separate cold heads.

5. The device as claimed in one of the preceding claims, characterized in that at least parts of the at least one pipeline (10a, 10b) have a gradient with respect to the horizontal (h) of more than 0.5°, preferably more than 1°.

6. The device as claimed in one of the preceding claims, characterized in that the superconductive winding (4a, 4b; 14j) contains high-T_c superconductor material.

7. The device as claimed in claim 6, characterized in that the superconductor material must be kept at a temperature below 77 K.

8. The device as claimed in one of the preceding claims, characterized in that a mixture of two or more refrigerant components with different condensation temperatures is provided as the refrigerant (k1 or k2, respectively).

9. The device as claimed in one of the preceding claims, characterized in that the superconductive magnet (3) is part of an MRI installation.